



California Department of Forestry and Fire Protection
Overview and Background
of
Threatened or Impaired Watershed Rules



My presentation will cover three main topics:

Actions Leading to Development of Threatened and Impaired Watershed Rules

**Board of Forestry Rule Changes
Since 1998 Pertaining to T & I Watershed Protection**

**Overview of
CDF Monitoring Programs**



Definition Of Watersheds with Threatened or Impaired Values:

- Any planning watershed where populations of anadromous salmonids that are listed as threatened, endangered, or candidate under the State or Federal Endangered Species Acts with their implementing regulations, are currently present or can be restored.

Actions Leading to Development of Threatened and Impaired Watershed Rules

January 1994

DFG Petitioned the Board of Forestry to List Coho Salmon (*Oncorhynchus kisutch*) as a Sensitive Species

- Recommended **watershed assessments** be conducted in key streams or reaches to determine the present condition of critical habitat elements and the status of fish populations.
- THP process must include appropriate **consultation** process and incorporation of consultation results in the approved project.
- Recommended development of **site-specific protection measures** based upon the results of the assessments.

Actions Leading to Development of Threatened and Impaired Watershed Rules

October 1995

Final Report on the Implementation and Effectiveness of the Watercourse and Lake Protection Rules

- Interagency Qualitative Approach
- CDF, DFG, NCRWQCB, LRWQCB, CVRWQCB, CCRWQCB, CGS (DMG), and RPFs
- “When considered as a whole, . . . the watercourse and lake protection rules are applicable on a majority of [THPs], implemented correctly most of the time, and generally effective in protecting water quality.”
- Issues identified:
 - Winter period Operations
 - Class III Protection
 - Restorable Uses of Water for Fisheries

**Actions Leading to Development of
Threatened and Impaired Watershed Rules**

1996

**The State Fish and Game Commission
Listed Coho Salmon
South of San Francisco Bay
as Threatened
Under the State Endangered Species Act
(CESA)**

**Actions Leading to Development of
Threatened and Impaired Watershed Rules**

1997

**The National Marine Fisheries Service (NMFS)
Listed Coho Salmon
as Threatened Throughout its Range
in California
Under the Federal Endangered Species Act
(ESA)**

**Actions Leading to Development of
Threatened and Impaired Watershed Rules**

**The US Environmental Protection Agency
(USEPA)
has Listed Several Waterbodies
Throughout the State
As Water Quality “Limited” or “Impaired”
Under § 303(d) of the Federal Clean Water Act
(CWA)**

Actions Leading to Development of Threatened and Impaired Watershed Rules

1999 Report of the Scientific Review Panel (SRP)

- The SRP was created under the auspices of the Watershed Protection and Restoration Council, as required by the March 1998 MOA between NMFS and the Resources Agency.
- The SRP concluded “the FPRs, including their implementation (the ‘THP process’) do not ensure protection of anadromous salmonid populations.”

Actions Leading to Development of Threatened and Impaired Watershed Rules

July 6, 1999

**The State Water Resources Control Board
and**

**The North Coast Regional Water Quality Control Board
Petition the Board of Forestry to Adopt Regulation Changes to Address
Water Quality Issues**

- An Interagency Technical Team was assembled to prepare a consensus package of proposed rule amendments focused on watersheds that contain or drain to waters containing ESA-Listed salmonids (The T&I Rules).
- The T&I rule package was jointly submitted to the Board of Forestry by the Resources Agency and Cal EPA.
- Regulations proposed under the petition were much broader than those finally brought to the Board.
- Legislation was passed to allow the T&I Rules to be adopted mid-year.
- The T&I Rules were passed by a unanimous vote of the Board.

Board of Forestry and Fire Protection Rule Changes Since 1998 Related to Salmonid Protection

New Forest Practice Rules address

- Watercourse and Lake Protection
- Coho Considerations
- Protection and Restoration in Watersheds with Threatened and Impaired Values (T & I)
- Interim Watershed Mitigation Addendum (IWMA)
- Road Management Plan (RMP)



Board of Forestry and Fire Protection Rule Changes Since 1998 Related to Salmonid Protection

OVERVIEW

Watercourse and Lake Protection (January, 1998)

- Follow-up to 1995 study by CDF
 - Directed by BOF in 1994
 - Looked at implementation and effectiveness of the rules
 - Multiagency participation
- Considered DFG Petition to List Coho
 - January 1994
 - Recommended Site-specific assessment and mitigation
- Addressed:
 - Winter period Operations
 - Class III Protection
 - Specific requirements in watercourses with Coho, Chinook, or Steelhead.

**Board of Forestry and Fire Protection
Rule Changes Since 1998
Related to Salmonid Protection**

**OVERVIEW
Coho Considerations
(January, 2000)**

- Require evaluation of impacts to watershed resources based upon both on-site and off-site cumulative effects to beneficial uses of water as defined in the Basin Plans
- Clarify that actual measurements may be required to evaluate impacts to watershed resources
- Clarify that a plan must comply with the water quality objectives of the Basin Plans
- Require greater description of locations and impacts from past activities
- Require new information and substantial changes to a THP be provided to reviewing agencies and the public for a sufficient period for review and comment

Board of Forestry and Fire Protection
Rule Changes Since 1998
Related to Salmonid Protection
OVERVIEW
Protection and Restoration in Watersheds
with Threatened and Impaired Values

- First effective July 1, 2000 through December 31, 2000 (SB 621)
- Extended January 1, 2001 through December 31, 2001
- SB 234 (2001) proposed a Legislative extension for 1 year, tied to the Board's funding.
- Extended January 1, 2002 through December 31, 2002 (w/ minor edits)
- Extended January 1, 2003 through December 31, 2003
- Last extended January 1, 2004 through December 31, 2006 (w/ minor edits)

Board of Forestry and Fire Protection
Rule Changes Since 1998
Related to Salmonid Protection
OVERVIEW
Protection and Restoration in Watersheds
with Threatened and Impaired Values

- The T&I Rules were adopted as “Interim Rules”.
- “By imposing a limit on the effective period of the rules, the Board would be allowed to work with landowners, scientists and other parties during the balance of the year . . . to investigate whether an alternative regulatory approach could be developed.”
- The Board established the Ad Hoc Watershed Committee to research whether an alternative approach can be developed that would use enhanced scientific analysis and the principals of watershed analysis to determine the impacts of harvesting operations.
- The Board hoped that an accumulation of knowledge applicable to specific watersheds and basins would be brought together by the various agencies and the public.

Board of Forestry and Fire Protection
Rule Changes Since 1998
Related to Salmonid Protection
OVERVIEW
Protection and Restoration in Watersheds
with Threatened and Impaired Values

- Require detailed descriptions and prescriptions for activity within and around Watercourse and Lake Protection Zones (WLPZs)
- Require recruitment of large woody debris (LWD)
- Require increased soil stabilization measures within a WLPZ, ELZ (Equipment Limitation Zone), and EEZ (Equipment Exclusion Zone)
- Allow the Director to require post-harvest evaluation of effectiveness of mitigations
- Require watercourse crossings that allow for unrestricted passage of all life stages of fish and water

**Board of Forestry and Fire Protection
Rule Changes Since 1998
Related to Salmonid Protection**

OVERVIEW

**Protection and Restoration in Watersheds
with Threatened and Impaired Values**

- Require permanent watercourse crossings to accommodate the estimated 100-year flood flow, including debris and sediment loads
- Require Department collaborate with RWQCB and SWRCB to prioritize watersheds and
 - conduct or participate in further assessment or analysis of watersheds as needed
 - participate in development of Total Maximum Daily Load (TMDL) problem assessment, source assessment, or load allocations related to timber operations
 - If existing rules are deemed insufficient, develop recommendations for watershed specific silvicultural implementation, enforcement and monitoring practices.

Board of Forestry and Fire Protection Rule Changes Since 1998 Related to Salmonid Protection

OVERVIEW

Interim Watershed Mitigation Addendum (IWMA)

(January, 2003)

- Defines the IWMA evaluation area be no smaller than a watershed containing a third order watercourse and no larger than a CalWater planning watershed
- Defines limiting factors for anadromous salmonids to include
water quality nutrients large woody debris water quantity
sedimentation water temperature
- Requires landowner to
 - identify limiting factors and site specific watershed conditions
 - propose mitigation measures addressing site specific conditions
 - specify proposed evaluation methodology (monitoring)
 - confer early in the process with review team agencies

Board of Forestry and Fire Protection
Rule Changes Since 1998
Related to Salmonid Protection
OVERVIEW
Interim Watershed Mitigation Addendum (IWMA)
(January, 2003)

- Intended to run concurrently with the T&I Rules as a “pilot.”
- Repealed by the Board pursuant to Case No. 02-501326, Superior Court of the State of California in and for the County of San Francisco (EPIC vs. BOF/CDF)

Board of Forestry and Fire Protection
Rule Changes Since 1998
Related to Salmonid Protection
OVERVIEW
Road Management Plan (RMP)
(2005)

- Circulated under a 45-day Public Notice
- Intended to provide a broad-scale analysis of impacts associated with timber harvesting transportation systems
- Based upon comments from the public and other agencies, the RMP was remanded back to the Board's Watershed Management Committee
- Currently being re-developed as a functional equivalent process under CEQA to be certified by the Resources Agency.

CDF Supported Post Management Agency Agreement (MAA) Monitoring Efforts:



- **Caspar Creek Watershed Study**
- **Hillslope Monitoring Program**
- **Modified Completion Report Monitoring**
- **Cooperative Monitoring Projects**
- **Supported Projects to Address Key Issues**

Caspar Creek Watershed Study

- Cooperative project between CDF and the USFS—Pacific Southwest Research Station.
- One of longest continuously running watershed studies in U.S.—began in **1962**.
- Strong financial support by CDF—approximately \$200K/year.

Caspar Creek Watershed Study

- Evaluates the effects of timber harvesting on sediment, streamflow, and cumulative effects in second-growth forests.
- The **South Fork** study evaluated the effects of selection harvest and tractor yarding from 1971-1973.
- The **North Fork** study evaluated clearcut harvesting and cable yarding from 1985 to 1991.

Caspar Creek Results

- South Fork logging without the Forest Practice Rules (FPRs) produced **2.4 to 3.7** times more sediment than the North Fork harvesting conducted under modern FPRs.
- South Fork logging resulted in numerous landslides related to roads, skid trails and landings.
- The number and size of landslides following North Fork logging was similar to surrounding unlogged areas.
- Changes in peak flows were relatively small following clearcut logging of nearly half the North Fork watershed in 3 years.

Caspar Creek Results

Biological Impacts

North Fork logging produced little or no evidence of sediment impacts to aquatic insect communities.

(stone flies, may flies, and caddis flies)

Variability was high, but no dramatic changes in the abundance of coho salmon or steelhead trout were recorded after the North Fork logging



Caspar Creek Instream Monitoring

Current and Planned Work

Nine new stations in the South Fork established in 2001 to collect data on

- sediment yield and
- flow prior to additional treatment.

South Fork project later in decade to

- determine effects of unevenage management and
- measure effects of mitigation work to address legacy road, skid trail, and landing problems.

Hillslope Monitoring Program

- Measures

The effectiveness of the FPRs in controlling hillslope erosion and sediment delivery to watercourses.

The effectiveness of the FPRs in providing riparian zone protection, including post-logging canopy.

- Winter measurement of fine sediment delivery to watercourses is not undertaken with this program.
- 300 THPs and NTMPs evaluated from 1996 through 2001.

Hillslope Monitoring Program

- Fifty (50) random THPs/NTMPs per year
- Over-winter 1 to 4 years and have significant Class I or II watercourses present
- Data collected on implementation and effectiveness from:

Road segments

Crossings

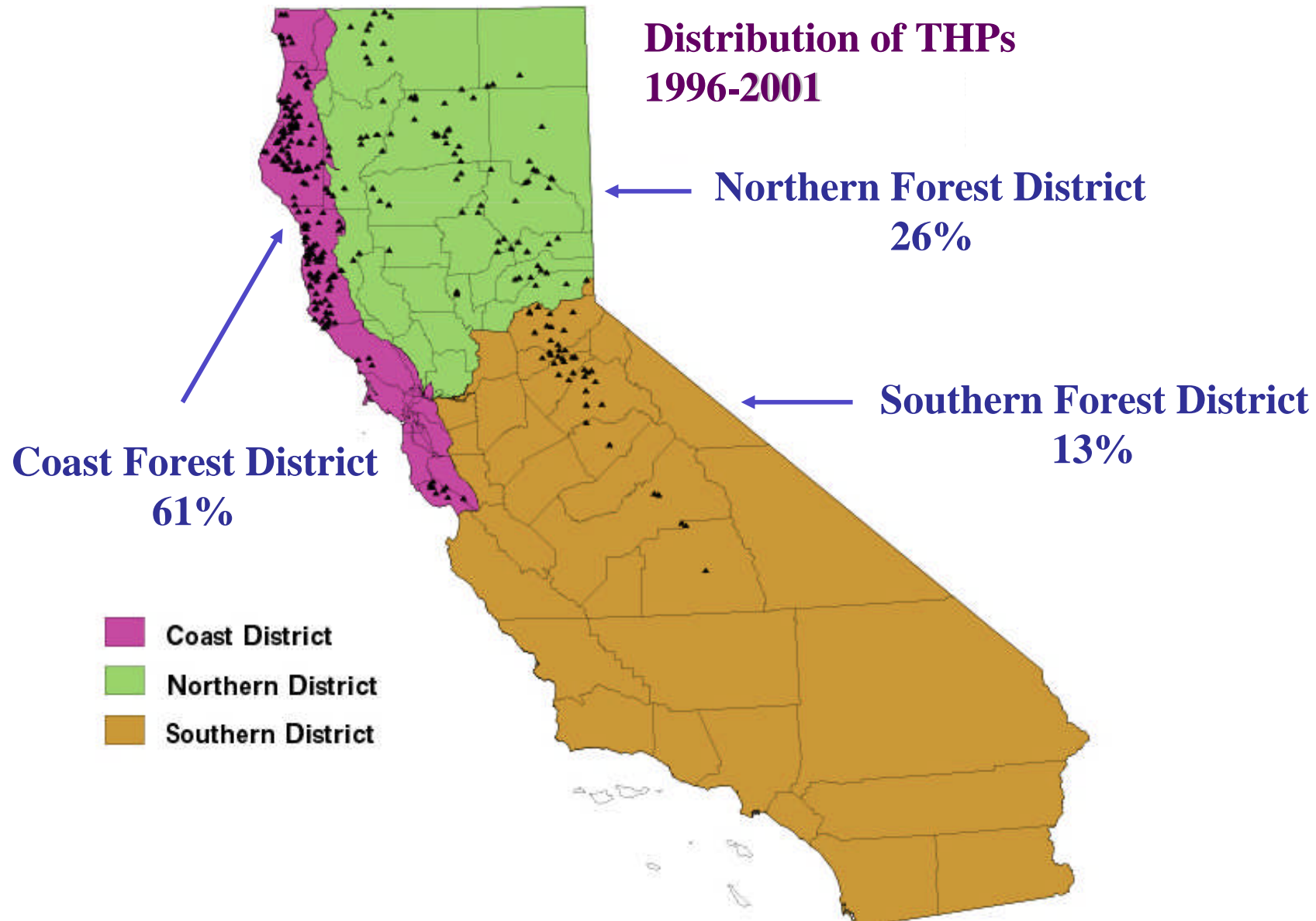
Skid trail segments

Watercourse Protection Zone segments

Landings

Large erosion events where encountered

Hillslope Monitoring Program



Hillslope Monitoring Program

1999 HMP Results

- ◆ **Individual practices required by the FPRs were generally effective in preventing hillslope erosion features.**
- ◆ **Erosion features were almost always associated with improperly implemented FPRs.**
- ◆ **Erosion problems on skid trails and landings were infrequent and produced minor impacts to water quality.**
- ◆ **Most problems were found on roads and at crossings.**

Areas of Concern:

Watercourse Crossings

- Common problems:**
- fill slope erosion
 - culvert plugging
 - scour at outlet
 - diversion potential.

Roads

- Common problems:**
- waterbreak spacing and size
 - the number, location and size of drainage structures.

Hillslope Monitoring Program

1999 HMP Recommendations

- For roads, we need better implementation of the Forest Practice Rules related to drainage structure design, construction, and maintenance.
- We need improvement for crossing design, construction and maintenance.



Modified Completion Report Monitoring

- Started in 2000
- Use CDF's Forest Practice Inspectors to collect monitoring data.
- 12.5% of all THPs completed are monitored.
- Roads, WLPZs, and Crossings evaluated.
- Inspections done when logging completed and after stressing storms.
- To date, 105 THPs sampled, 82 with WLPZs.
- Randomly located 200 ft WLPZ segments; a 50 point grid and a sighting tube are used for measurement.

Cooperative Monitoring Projects

Goal: establish cooperative watershed monitoring projects in selected basins for long-term instream trend monitoring

Selected Basins for Instream Trend Monitoring to date:

Garcia River Watershed

Garcia River Instream Monitoring Project Summary

Phase I

watershed assessment and
instream monitoring plan

Phase II

implementation of
instream monitoring plan

Documentation

- chronicles **baseline** instream habitat conditions
- examines **long-term trends** to determine if instream conditions are improving.

Cooperative Monitoring Projects



**Additional projects for
THP-scale instream monitoring**

**Sierra Pacific Industries
Sierra Nevada/Cascade Province**

**Campbell Timberland Management/Hawthorne
Mendocino County**

**Calpoly Swanton Pacific Ranch
Little Creek
Santa Cruz County**

Supported Projects

Addressing Key Issues

GOALS

- Support selected monitoring projects that can provide critical information related to monitoring techniques, monitoring efforts.
- Support selected monitoring projects that can answer key questions regarding forest practice implementation and effectiveness.

Examples of Supported Research Projects

Testing Indices of Cold Water Fish Habitat

Knopp (1993)

Erodible Watershed Index

McKittrick and Spittler (1994)

Evaluation of Road Stream Crossings

Flanagan et al. (1998)

V-Star Tests in Varying Geology

Lisle and Hilton (1999)

Sediment Composition as an Indicator of Stream Health

Dr. Mary Ann Madej, USGS, and Dr. Peggy Wilzbach,
HSU (in progress)

Central Sierra Nevada Sediment Study

Dr. Lee MacDonald, CSU (in progress)

Overall Monitoring Results

SUMMARY

- Post-harvest canopy is high and exceeds FPR requirements.
- Watercourse crossing have frequent problems, many of which relate to maintenance issues.
- Roads require better implementation of the Rules related to drainage structure design, construction, and maintenance.
- Changes in peak flows related to harvesting under the current FPRs are minor in larger basins.
- Implementation of the modern FPRs (post-1973) have substantially reduced water quality impacts related to sediment.
- Individual practices required by the FPRs are generally effective in preventing hillslope erosion features when properly implemented.



CONCLUSION

CDF recognizes that much progress has been made in the area of salmonid protection through rule and process revision over the last 10 years.

CDF is pushing ahead to develop the information and data needed to support new changes, and is committed to working through to conclusion the many issues that stand before us.

In view of the progress and our commitment, we urge the board to move ahead with an extension to the existing T & I rules for timber harvesting activities under the Forest Practice Act.

Thank you. Questions?

